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Amendments to the Drawings:

The attached sheets of drawings labeled "replacement sheet" include changes to FIGS. 1, 4B, 14 and 15, in accordance with the Examiner's requirements. These sheets replace the original sheets for FIGS. 1, 4B, 14 and 15. Sheets showing the changes are labeled "annotated sheet".

Also, replacement drawing sheets for FIGS. 2, 20 and 26 are attached, and are labeled "replacement sheet". No sheets showing changes are provided for FIGS. 2, 20 and 26, as only the shading is made more uniform, as required by the Examiner.

REMARKS

Claims 1-4, 16-19, 29-32, 40-43, and 46-47, that is all of the independent claims, have been amended. The amendments were made based on the contents of the application (for example, page 71 line 23 - page 72 line 21) to clarify the claims. It is respectfully submitted that no new matter is being presented, and approval and entry are respectfully requested.

Claims 1-47 are pending and under consideration. Reconsideration and allowance of the claims is respectfully requested.

Drawings:

It is believed that the above-described replacement drawings overcome the objection to the drawings. Removal of the objections to the drawings is respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 102:

In the Office Action, Claims 1-3, 16-18, 29-31, 40-42, 46 and 47 are rejected under 35 U.S.C. § 102(b) as being anticipated by Sorimachi (US Patent No. 5,331,442 A). Reconsideration and removal of this rejection are respectfully requested in view of the present amendments to the claims and the following remarks. It is respectfully submitted that Claims 1-3, 16-18, 29-31, 40-42, 46 and 47 patentably distinguish over the cited prior art.

As mentioned above, all of the rejected independent claims are amended. Independent Claim 1, as amended, is to a boundary detection method that includes extracting feature information depending on all

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pixels in a unit area for each unit area of an image data, obtaining a difference in the feature information between adjacent unit areas for an arbitrary unit area, and determining as a boundary the unit area whose difference is at or higher than a predetermined level. The input image data of an original whose front image is input with a background board as its background, the boundary between areas having different features among arbitrary adjacent areas in the image data is detected, a target is roughly predicted with a printing area first excluded, and a variance in feature information from the adjacent area corresponding to the printing area can be ignored, then the boundary between the background board and the original is detected. If unit area of an image is set widely, the boundary position between the background board on the image and the original is provisionally determined based on the feature amount obtained in a two-dimensional fast-Fourier-transform, a one-dimensional fast-Fourier-transform is performed in a unit of an area smaller than the unit area of the image, and then a Wavelet transform is performed for detecting the position of the boundary.

Applicants respectfully submit that Sorimachi does not teach or suggest the features of the independent claims which include the above-recited language, thus it is respectfully submitted that the independent claims patentably distinguish over Sorimachi. Reconsideration and removal of the rejections are respectfully requested.

REJECTIONS UNDER 35 U.S.C. §103:

In the Office Action, Claims 4, 10, 19, 25, 32, 35, 36 and 43 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sorimachi (US Patent No. 5,331,442 A) in view of Ohta (US Patent No. 5,173,788 A) and Yang (US Patent No. 5,889,755 A); Claims 6-8, 21-23,

34, 45 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sorimachi (US Patent No. 5,331,442 A) in view of Noguchi (US Patent No. 5,764,380 A); Claims 5, 9, 12, 14, 20, 24, 27, 33, 38 and 44 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sorimachi (US Patent No. 5,331,442 A) in view of Ohta (US Patent No. 5,173,788 A) and Yang (US Patent No. 5,889,7559 A) and further in view of Noguchi (US Patent No. 5,764,380 A); and Claims 11, 13, 26 and 37 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sorimachi (US Patent No. 5,331,442 A), in view of Ohta (US Patent No. 5,173,788 A), Yang (US Patent No. 5,889,7559 A) and Noguchi (US Patent No. 5,764,380 A) and further in view of Nakashima (US Patent No. 5,982, 952 A). Reconsideration and removal of these rejections are respectfully requested in view of the present amendments to the claims and the following remarks.

It is respectfully submitted that Claims 4-45 patentably distinguish over the cited prior art. Independent Claim 4, as amended, is to a boundary detection method that includes performing a Fourier-transform on each first unit area of an input image data, extracting first image frequency information of predetermined types obtained by the courier- transform processing, defining a value obtained by adding a predetermined weight to each type of the extracted first image frequency information as representative feature information for each of the first unit area, provisionally determining as a boundary a corresponding area on an approximate line obtained by performing line approximation on a first unit area whose variance from the representative feature information about an adjacent first unit area is at or higher than a predetermined level in an arbitrary first unit area, performing a Fourier-transform on each second unit area smaller than the first unit area in the first unit area provisionally determined as the boundary and a vicinal area of the first unit area, extracting second image frequency information of

predetermined types obtained by the Fourier-transform, defining as representative feature information a value obtained by adding a predetermined weight to each type of the extracted second image frequency information for each second unit area, performing a Wavelet transform on the representative feature information, performing line approximation on a second unit area whose value for each second unit area obtained by the Wavelet transform is at or higher than a predetermined level, and determining a position on the approximate line obtained by the line approximation as the boundary. The input image data of an original whose front image is input with a background board as its background, the boundary between a background board and an original for the input image data of an image of a part of the background board and an edge of the original input in a same color is detected, a target is roughly predicted with a printing area first excluded, and a variance in feature information from the adjacent area corresponding to the printing area can be ignored, then the boundary between the background board and the original is detected. If unit area of an image is set widely, the boundary position between the background board on the image and the original is provisionally determined based on the feature amount obtained in a two-dimensional fast-Fourier-transform, a one-dimensional fast-Fourier-transform is performed in a unit of an area smaller than the unit area of the image, and then a Wavelet transform is performed for detecting the position of the boundary.

The Applicants respectfully submit that none of the references, taken individually or in combination, teach or suggest the features of any of the independent claims as amended, and that the independent claims patentably distinguish over the cited prior art.

The dependent claims depend, directly or indirectly, from the amended independent claims and include all the features of that claim


plus additional features which are not taught or suggested by the prior art. Therefore, it is submitted that the dependent claims patentably distinguish over the cited prior art. In view of the amendments to the claims and the above remarks, removal of the rejections is respectfully requested.

In view of the remarks and claim amendments set forth above, it is believed that this application is in condition for allowance, which action is respectfully requested.

In the event that this paper is not timely filed, the Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and other fees due with respect to this paper to Deposit Account No. 01-2340.

Respectfully submitted,

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ANNOTATED SHEET

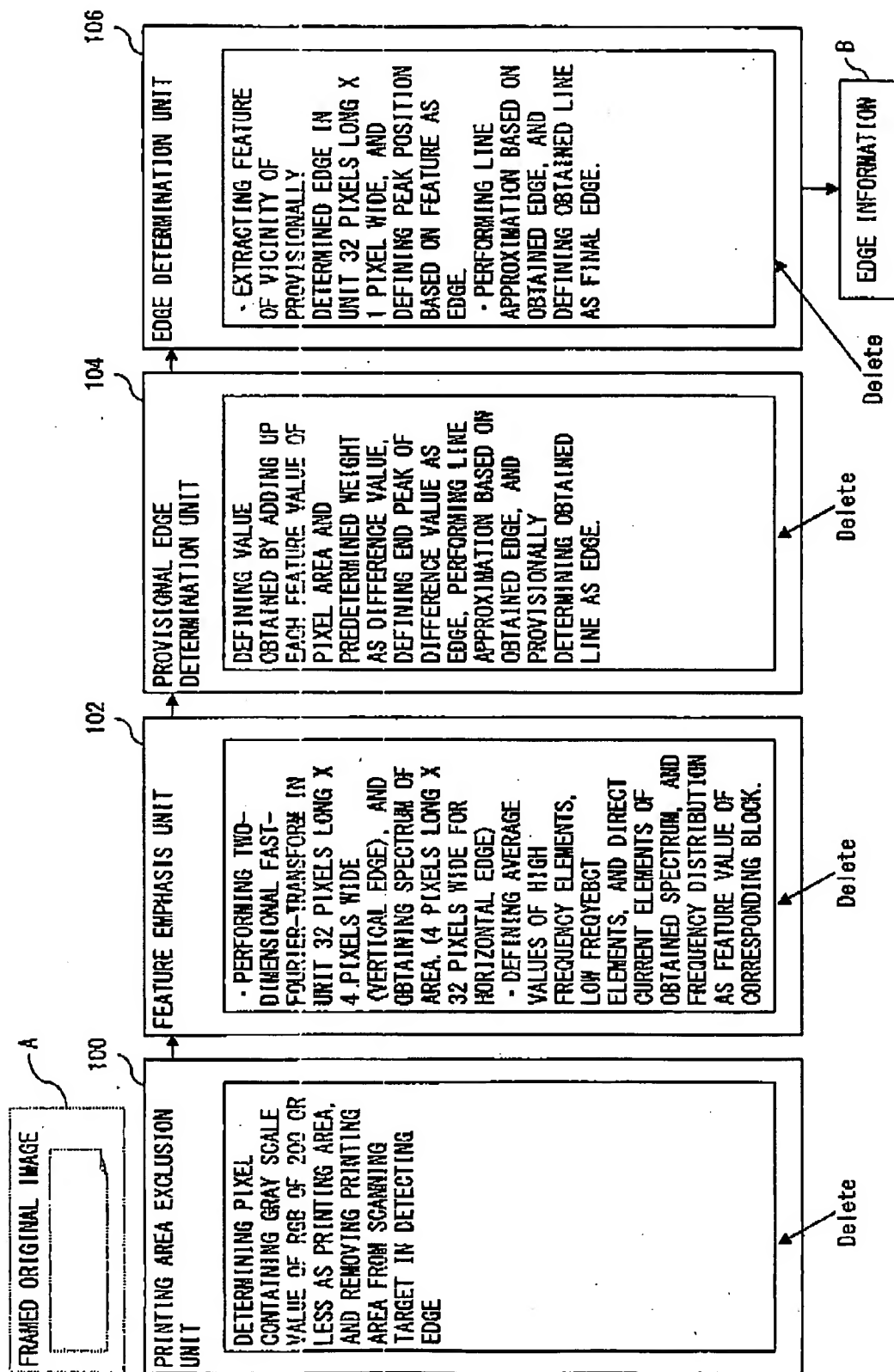


FIG. 1

ANNOTATED SHEET

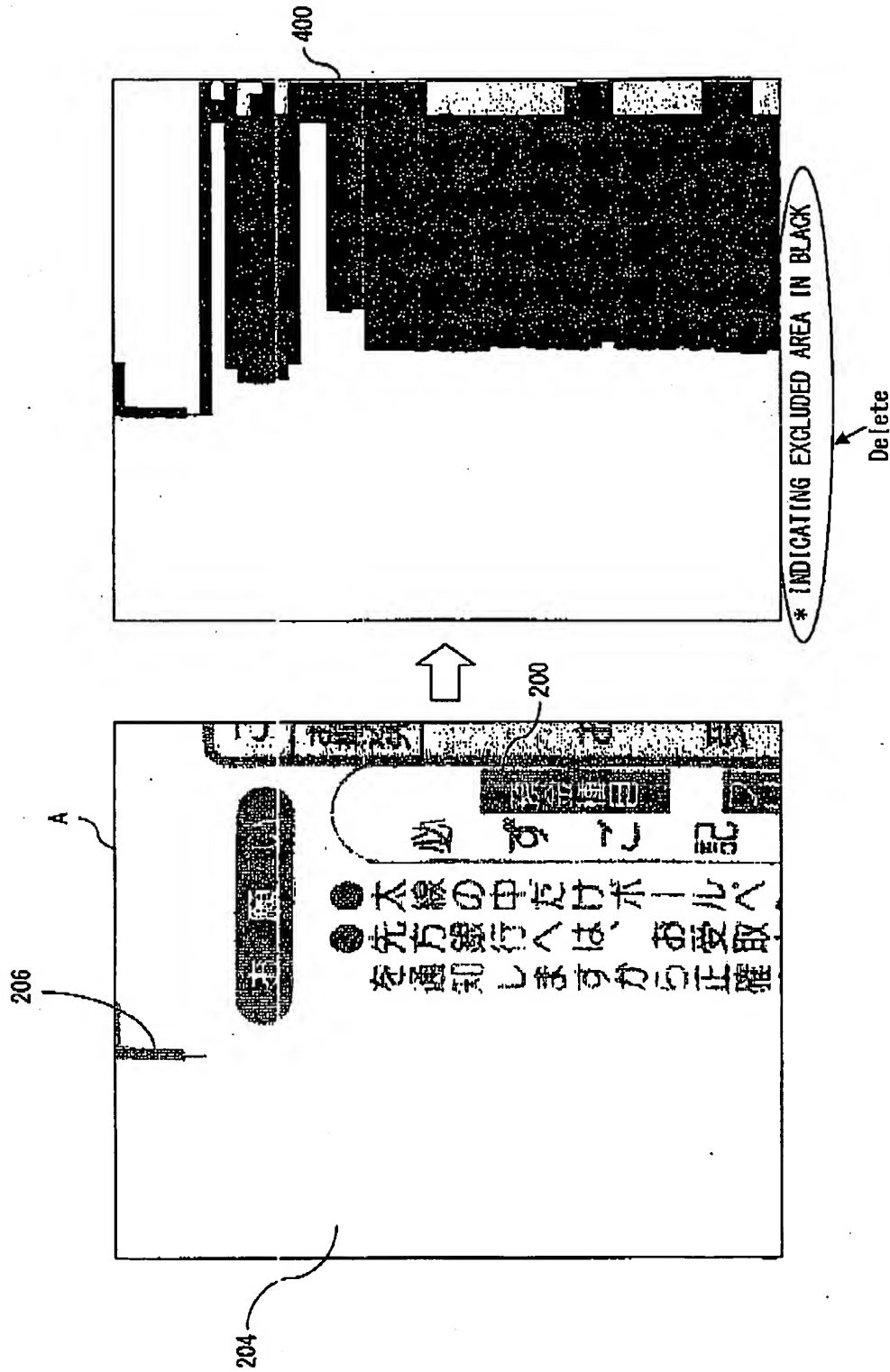


FIG. 4B

FIG. 4A

ANNOTATED SHEET

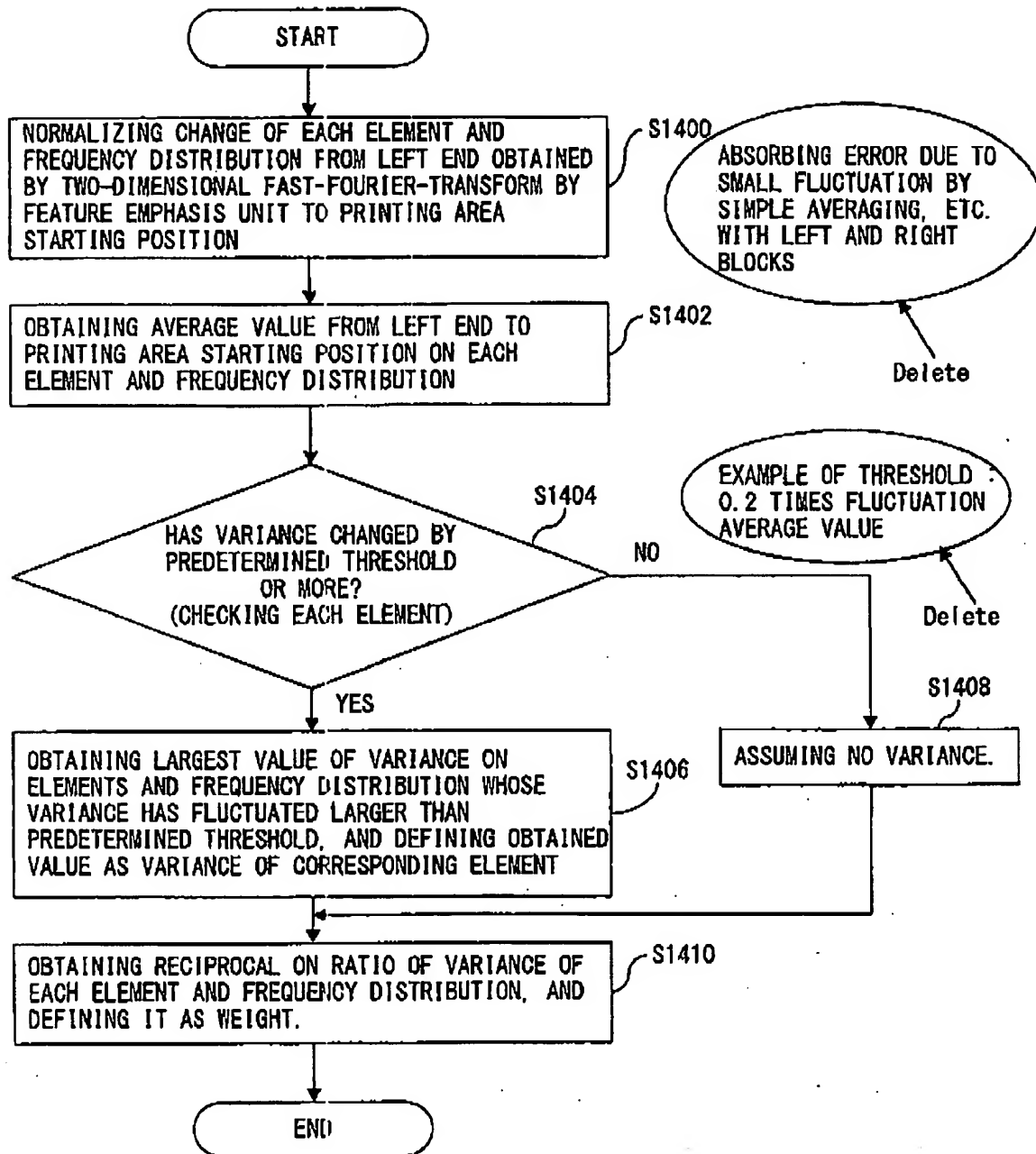


FIG. 14

ANNOTATED SHEET

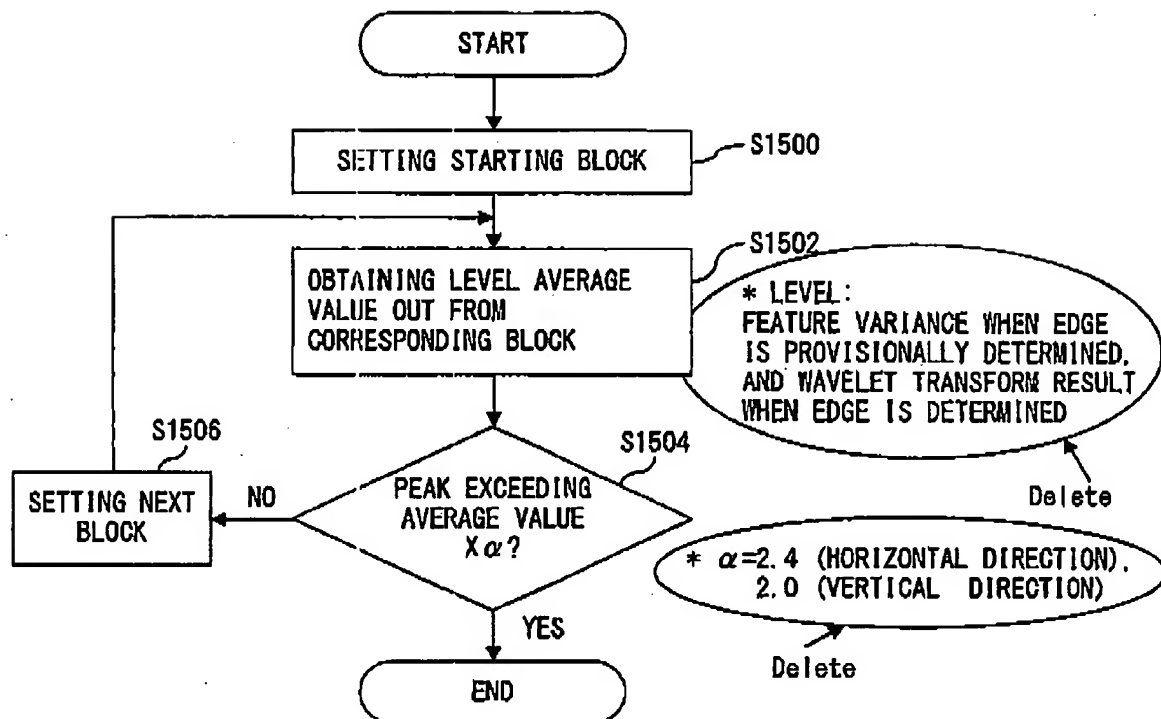


FIG. 15